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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,984	08/20/2001	Sashiro Uemura	96790p374	7676

8791 7590 07/27/2004

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER

GUHARAY, KARABI

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/933,984

Applicant(s)

UEMURA ET AL.

Examiner

Karabi Guharay

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment, filed on 15 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>09/03 & 08/01</u> . | 6) <input type="checkbox"/> Other: _____ |

Amendment, filed on 15 April 2004 has been considered. Claim 1 has been amended, and claim 2 is cancelled.

Claim Objections

Claims 3-7 are objected to because of the following informalities: Claims 3-7 are dependent on cancelled claim 2. Appropriate corrections are required. For the purpose of the prior art rejection it is considered that claims 3 & 5 are dependent on claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-9 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Duboc Jr. et al. (US 5541473, hereinafter Duboc).

Regarding claim 1, Duboc discloses a vacuum fluorescent display (a flat CRT, see Fig 2), comprising a front glass member (220) which has light transmission, a substrate (201) opposing the front glass member (220) through vacuum space (lines 37-39 of column 8) a phosphor film (222a, 22b) formed on a surface of the front glass (220) member which opposes the substrate (201) and having a predetermined display pattern; an electron-emitting portion (202a, 202b, line 61 of column 5) mounted on the substrate to oppose the phosphor film and having an electron emitting surface (202a, 202b) corresponding to the display pattern; an electron extracting electrode (212, 214, 216, 218) arranged in the vacuum space between the electron-emitting portion and the

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phosphor film; an insulating (211) formed with partitions (see Fig 2) formed on the substrate (201) for supporting the extraction electrodes and dividing the electron emitting surfaces of the into a plurality of regions, the partitions (211) are made of ceramic (lines 12-15 of column 6). Though Duboc does not explicitly disclose that the insulating material (ceramic in this case) produces larger number of secondary electrons than that of bombarded electrons, it is inherent, since ceramic material has secondary electron emission coefficient greater than 1.

Regarding claim 4, Duboc discloses that the partitions have height of 0.2 mm to 2.0 mm each and are arranged at an interval 0.5 to 5 times the height (lines 12-17 of column 6).

Regarding claim 3, 5-6, Duboc discloses that the partitions (211 of Fig 2) are arranged substantially equidistant and parallel to each other, and partitions divides the electron-emitting surface into a plurality of electron emitting region of same shape like strip region parallel to each other (see Fig 2).

Regarding claim 7, Duboc discloses that the insulating support member (211) has an opening corresponding to the display pattern and the partition is integrally formed with the insulating support member (see Fig 2 & Fig 3) so as to divide the opening into a plurality of slit like divisions (Fig 2).

Regarding claims 8 & 9, Duboc discloses that the extraction electrodes (212, 214, 216, 218) are formed of a mesh like metal plate formed of a conductive film, and is supported by the insulating support member to be spaced apart from the electron emitting surface by a predetermined distance (lines 45-63 of column 6).

Regarding claim 12, Duboc discloses that the electron-emitting portion and the phosphor film comprises a plurality of sets of electron emitting portion and phosphor films provided in the vacuum space in one to one correspondence for each display pattern (see Fig 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over as applied to claim Duboc et al. as applied to claim 1 above, and further in view of Ohki et al. (US 6545396).

Regarding claim 10, Duboc discloses all the limitations of claim 10 except for electron emitting portion being carbon nano-tubes formed of cylindrical graphite layers.

However, Ohki discloses a flat display with field emission electron source where field emission source comprises carbon nano-tube (lines 56-61 of column 2, Figs 2-4) since compared to metallic micro-tips carbon nano-tubes are superior in durability and thermal stability with low work function.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use carbon nano-tubes in the device of Duboc, instead of metallic microtip as the field emission material since this has superior durability and thermal stability with low work function.

Regarding claim 11, Ohki et al. disclose that the electron-emitting portion comprises a plate like member (2 of Fig 2) having a large number of through holes (recesses) and serving as a growth nucleus for nanotubes (lines 41-45 of column 4) and a coating film (25) formed of a large number of nanotubes formed on a surface of the metal member (2) and on the wall of the through-holes (see Fig 2). The same reason for combining art as in claim 10 applies.

Other Prior Art Cited

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure : Na et al. (US 6756729); Choi et al. (US 6642639); Van Gorkom et al. (US 6188178): teaches that the ceramic material has secondary electron emission coefficient greater than 1.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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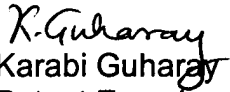
TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is (571) 272-2452. The examiner can normally be reached on Monday-Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Karabi Guharay
Patent Examiner
Art Unit 2879


ASHOK PATEL
PRIMARY EXAMINER